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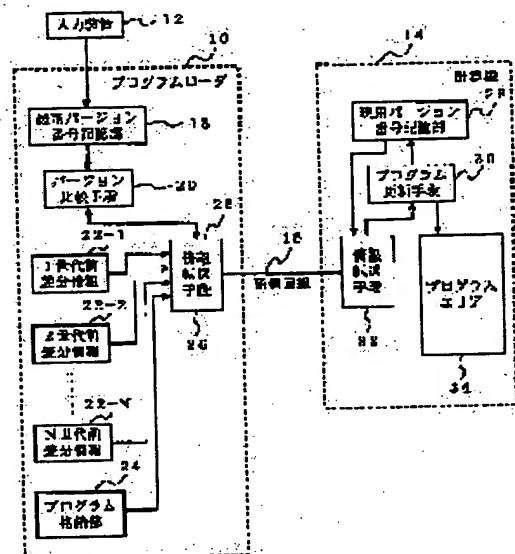
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(54) PROGRAM DOWN-LOADING DEVICE AND ITS METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a program down-loading device capable of speedily sending a program by down-loading only differential information to a group of terminal devices with dispersion in the versions of programs.

SOLUTION: In a system connecting a computer 14 and a program loader 10 through a communication line 16, at the time of down-loading a newest version program stored in the loader 10 to the computer 14, only differential information is down-loaded by plurally having differential information of the newest version program and a program stored in the computer 14, thereby the down-loading time is shortened.



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CLAIMS

[Claim(s)]

[Claim 1] It is equipment which downloads a program to the computer which is the terminal unit connected to the program loader. Said program loader The program storing section in which the version of a program stores the newest latest version program, the difference which is the difference of said latest version program and earlier version program -- with information The latest version number storage section which memorizes the latest version number of said latest version program, the program which said calculating machine uses -- present -- business -- with a version comparison means to compare said latest version number memorized by a version number and said latest version number storage section the result of said comparison -- said -- present -- business, when a version number is smaller than said latest version number said difference -- information -- said calculating machine -- transmitting -- said -- present -- business -- the difference corresponding to a version number, when there is no information It has the 1st information transfer means which transmits said newest program to said computer. Said computer The 2nd information transfer means which exchanges said program loader and information, the program area which performs a program -- said -- present -- business -- the version number is memorized -- present -- business -- with the version number storage section pass said 1st and 2nd transfer means from said program loader -- said transmitted latest version program or said difference -- it has a renewal means of a program to update the program which is in said program area using information -- Program download equipment characterized by things.

[Claim 2] the time of two or more versions of a program existing -- said difference -- the program download equipment according to claim 1 characterized by information including the difference of said latest version program and each earlier version program of said, respectively.

[Claim 3] Said program loader and said computer are program download equipment according to claim 2 characterized by the communication line connecting.

[Claim 4] Said program loader and said calculating machine are program download equipment according to claim 2 characterized by the telecommunication cable connecting.

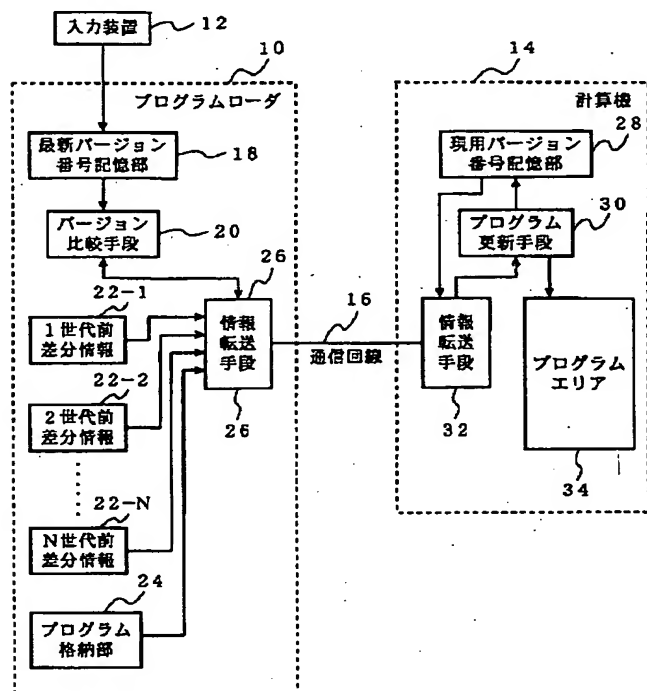
[Claim 5] It is the approach of connecting to a program loader the computer which is a terminal unit, and downloading a program to a computer. the difference said whose program loader is the difference of a latest version program and an earlier version program beforehand -- with the step which prepares information the program for which said program loader is used by said calculating machine -- present -- business -- with the step which acquires a version number said program loader -- said -- present -- business -- with the step which compares a version number with the latest version number of said latest version program the result of said comparison -- said -- present -- business, when a version number is smaller than said latest version number said difference -- information -- said calculating machine -- transmitting -- said -- present -- business -- the difference corresponding to a version number, when there is no information said newest program -- said calculating machine -- transmitting -- said -- present -- business, when a version number is equal to said latest version number the difference to which the step which does not transmit such program information, and said calculating machine have been transmitted from said program loader -- the program download approach

characterized by including the step which updates a program by information or the latest version program.

[Claim 6] the time of two or more versions of a program existing -- said difference -- the program download approach according to claim 5 characterized by information including the difference of said latest version program and each earlier version program of said, respectively.

[Translation done.]

Drawing selection Representative drawing



[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] the program loader which sends a program to the computer whose this invention is a terminal unit on the Internet -- two or more difference -- it is related with shortening the time amount of download by sending it with information.

[0002]

[Description of the Prior Art] In the computer system in local-areas, such as in the company [LAN], it is performed daily that a program and data download to a terminal unit. The program in use needed to download the whole program, whenever the program of the latest version was announced. Downloading the whole program needed most time amount. In order to solve this problem, the "transfer control system of a terminal control program" of a publication was proposed by JP,5-40712,A. according to a method given in this official report -- a latest version program and under the present use -- present -- business -- the time amount of download was able to be shortened by sending the compile unit of the difference of a version program.

[0003] however, this method -- under use to a terminal unit -- present -- business -- for a certain reason, that from which the version of a version program differs with a terminal unit will also have two or more compile units in a host side, and the problem that the management by the side of a host became complicated had produced it. Then, in order to solve this problem, the "processing program download method of a terminal unit" of a publication was proposed by JP,7-219780,A. A method given in this official report is a method which downloads a program from a center to a terminal unit in the system which consists of two or more terminal units connected by the center and the communication line. the center this system feature of whose is the informer of a program -- the difference of the program of the latest version, and the program before time cost -- the point with one information was suited. this difference -- by downloading information to a terminal unit, the program before the time cost of the latest version in use can use it as a latest version program with a terminal unit. Moreover, if the program of a terminal unit is a program two or more generations ago, all the newest programs will download.

[0004]

[Problem(s) to be Solved by the Invention] The modem card of routers, such as the Internet, has dispersion in the version of the program currently been [a program / it] scattered and used for 100 national numbers. difference -- when the difference between a latest generation and two generations or more had the generation of the program from which information is set as the object of download for it to be only one, the whole program had to be downloaded, and there was a problem that compaction of the time amount which download takes could not be performed.

[0005] the purpose of this invention -- two or more difference -- the terminal unit group to which dispersion has a program loader with information in the version of a program -- receiving -- difference -- it is in offering the program download equipment and the approach of sending a program quickly by downloading only information.

[0006]

[Means for Solving the Problem] This invention is equipment which downloads a program to the computer which is the terminal unit connected to the program loader. Said program loader The

program storing section in which the version of a program stores the newest latest version program, the difference which is the difference of said latest version program and earlier version program -- with information The latest version number storage section which memorizes the latest version number of said latest version program, the program which said calculating machine uses -- present -- business -- with a version comparison means to compare said latest version number memorized by a version number and said latest version number storage section the result of said comparison -- said -- present -- business, when a version number is smaller than said latest version number said difference -- information -- said calculating machine -- transmitting -- said -- present -- business -- the difference corresponding to a version number, when there is no information It has the 1st information transfer means which transmits said newest program to said computer. Said computer An information transfer means to exchange said program loader and information, and the program area which performs a program, said -- present -- business -- the version number is memorized -- present -- business -- with the version number storage section pass said 1st and 2nd transfer means from said program loader -- said transmitted latest version program or said difference -- it has a renewal means of a program to update the program which is in said program area using information.

[0007] the time of two or more versions of a program existing with such program download equipment -- said difference -- information includes the difference of said latest version program and each earlier version program of said, respectively.

[0008] This invention relates to the approach of connecting to a program loader the computer which is a terminal unit, and downloading a program to a computer. Moreover, this approach the difference said whose program loader is the difference of a latest version program and an earlier version program beforehand -- with the step which prepares information the program for which said program loader is used by said calculating machine -- present -- business -- with the step which acquires a version number said program loader -- said -- present -- business -- with the step which compares a version number with the latest version number of said latest version program the result of said comparison -- said -- present -- business, when a version number is smaller than said latest version number said difference -- information -- said calculating machine -- transmitting -- said -- present -- business -- the difference corresponding to a version number, when there is no information said newest program -- said calculating machine -- transmitting -- said -- present -- business, when a version number is equal to said latest version number the difference to which the step which does not transmit such program information, and said calculating machine have been transmitted from said program loader -- the step which updates a program is included by information or the latest version program.

[0009]

[Embodiment of the Invention] The program download equipment of this invention is explained with reference to drawing 1 . Program download equipment consists of a program loader 10, an input unit 12 which inputs a program and various information into a program loader 10, and a computer 14 showing a terminal unit, and the program loader 10 and the computer 14 are connected by the communication line 16.

[0010] The latest version number storage section 18 whose program loader 10 is the version number of a latest generation program, A version comparison means 20 to compare and judge the version number and latest version number by the side of a calculating machine, the difference of a latest generation program and each generation program -- two or more difference with information -- information 22 (by a diagram) one generation before -- difference -- 1 or 2 generations before information 22- difference -- before information 22-2, --, N generation -- difference -- it has information 22-N, the program storing section 24 which stored a latest generation's program, and an information transfer means 26 to exchange information on a program loader 10.

[0011] a calculating machine 14 memorizes the version number of the program by which current use is carried out by the calculating machine 14 -- present -- business -- the version number storage section 28 and difference -- it has a renewal means 30 of a program to update a program using information, the program area 34 which is the location where a program is stored and performed, and an information transfer means 32 to exchange a program loader 10 and

information.

[0012] If directions of download are inputted from an input unit 12, a program loader 10 will be accessed through a communication line 16 at a computer 14. a calculating machine 14 -- present -- business -- it is stored in the version number storage section 28 -- present -- business -- the data of a version number are sent to a program loader 10. a program loader 10 -- present -- business -- if the data of a version number are received, it will send to the version comparison means 20. the version comparison means 20 was received -- present -- business -- it compares with the data of a version number, and the data of the latest version number storage section 18.

[0013] the result of a comparison -- present -- business -- when the generation number of a version is a front more than time cost compared with a latest generation number, a program loader 10 asks for what the number of the differences is. the required difference corresponding to the difference which produced the program loader 10 -- information 22 is sent to a computer 14. the difference to which the computer 14 has been sent -- information 22 is passed to the renewal means 30 of a program. the renewal means 30 of a program -- difference -- the difference stored in information 22 -- informational data are moved to the program of a program area 34, and are updated. coincidence -- the renewal means 30 of a program -- present -- business -- the version number storage section 28 -- present -- business -- the data of a version number are rewritten for the number of the latest version.

[0014] a calculating machine 14 -- present -- business -- when it does not have a version number, a program loader 10 sends a latest generation program to a calculating machine 14 from the program storing section 24. A computer 14 stores the sent latest generation program in the renewal means 30 of a program at delivery and a program area 34.

[0015] present -- business -- when a version number and a latest version number are the same numbers, communicative cutting processing is carried out as it is.

[0016] Next, explanation of actuation of an example is explained to a detail using drawing 2 and drawing 3. Drawing 2 is a flow chart for explaining actuation of this invention. As shown in drawing 2, a program loader 10 is connected with a computer 14 through a communication line 16 in response to directions of an input unit 12. a calculating machine 14 -- present -- business -- the generation number of the program which the calculating machine 14 is using from the version number storage section 28 is sent out from the information transfer means 32. The generation number of the sent program is received with the information transfer means 26 of a program loader 10 through a communication line 16 (step A1). The generation number of the program received with the information transfer means 26 is sent to the version comparison means 20, and is compared with the latest generation number of the latest version number storage section 18 (step A2). A comparison result is classified by three kinds (step A3).

[0017] present -- business -- any generation difference of which when the generation number of a version is a front more than time cost compared with a latest generation number, there is -- asking -- the difference -- being based -- required difference -- information -- difference -- it chooses out of information 22 and sends out to a computer 14 from the information transfer means 26 (step A4). the sent difference -- information 22 should pass a communication line 16 -- the information transfer means 32 of a computer 14 is passed to reception and the renewal means 30 of a program. the program in which the renewal means 30 of a program is stored in the program area 34 -- difference -- information -- being based -- updating -- coincidence -- present -- business -- the generation number of the version number storage section 28 is updated (step A5). A communication line is cut in the place which the update process ended (step A7).

[0018] present -- business -- when there is no generation number of a version, a program loader 10 should pass delivery and a communication line 16 for the information transfer means 26 in a latest version program from the program storing section 24 -- the information transfer means 32 of a computer 14 is passed to reception and the renewal means 30 of a program. the renewal means 30 of a program -- a program area 34 -- a latest version program -- storing -- coincidence -- present -- business -- a latest generation's number is stored in the generation number of the version number storage section 28 (step A5). A communication line is cut in the

place which the update process ended (step A7).

[0019] present -- business -- since the need for version up of a program does not have the generation number of a version when it is the same as a latest generation number, cutting processing of the communication line is carried out as it is (step A7).

[0020] It explains using an example. it is shown in drawing 3 -- as -- for example, the version number of the latest version number storage section 18 -- a version 5 -- carrying out -- present -- business -- the version number storage section 28 -- present -- business -- suppose that a version number is a version 3. the difference stored in the program loader 10 on the other hand -- as information -- difference with one-generation before (that is, version 4) -- difference with 1 or 2-generation before of information 22- difference with 2 or 3-generation before of information 22- difference with 3 or 4-generation before of information 22- information 22-4 is set. Moreover, the latest-generation program of a version-5 is set to the program storing section 24.

[0021] if a calculating machine 14 is connected with a program loader 10 (step A1) -- a calculating machine 14 -- present -- business -- a version comparison means 20 by which the information on a version number was received is compared with a latest version number (step A2). the latest version -- present -- business -- since the number of a version is small, it progresses to step A4 and difference is calculated. since it is 3= 2 generations before 5- difference with two-generation before -- information 24-2 is transmitted. difference -- with the renewal means 30 of a program, information 24-2 is updated within a program area 34 -- having -- present -- business -- the generation number of the version number storage section 28 is also changed to a latest generation's version 5 (step A5).

[0022] above -- carrying out -- two or more difference of a program loader 10 -- information can be sent to a computer 14.

[0023] In the above example, although it is the case where a program loader and a computer are connected by the communication line, as shown in drawing 4, this invention connects a program loader 10 and a computer 14 with a telecommunication cable 36, and can apply them also to systems, such as in the company [LAN].

[0024]

[Effect of the Invention] according to this invention -- a program loader -- two or more difference with a latest generation -- the calculating machine of most which has the program of an old generation's version in case the program of a calculating machine is updated through a communication line, since it has information -- receiving -- difference -- the difference which should download only information and corresponds -- when there is no information, the whole program is downloaded only to a calculating machine without a program. Thereby, compaction of the time amount which download takes can be performed.

[Translation done.]